

Range

The Range of a function is the same thing as:

1. Dependent Variable
2. y-values
3. Output values

There are two types of range:

1. Theoretical Range:
2. Practical Range:

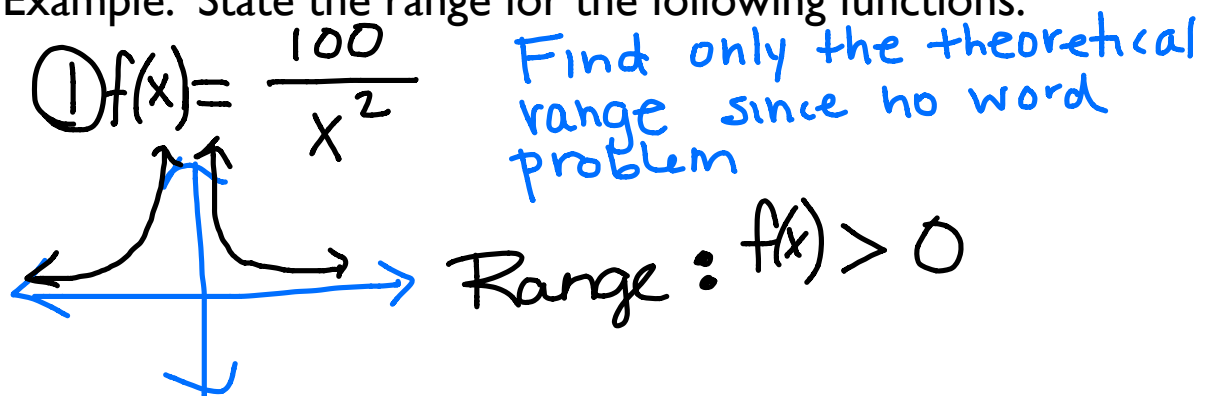
Theoretical Range:

Find ALL possible dependent (y-values) that work in the equation. Use a graph to help you to state the range of the function.

Practical Range:

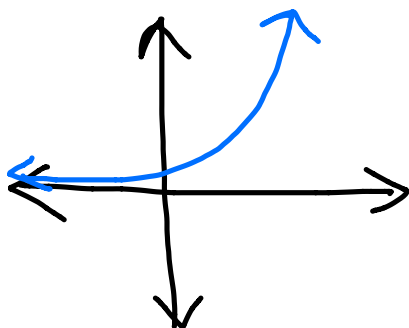
Find ALL the dependent values (y-values) that ONLY make sense in the WORD PROBLEM. If the function is from a height vs. time word problem, then you can not have negative height(y-value)

Example: State the range for the following functions:



② $f(x) = 3(4)^x$

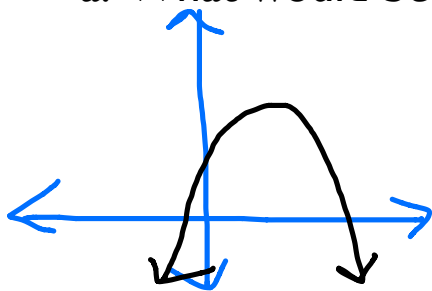
Range: $f(x) > 0$



3. In a height as a function of time word problem, where the initial height is 2 ft and the initial upward velocity is 40 ft/sec, the equation would be $h(t) = -16t^2 + 40t + 2$.

a. What would be the practical range?

Write only what makes sense in the word problem.



Range: From 0 ft to 27 ft
 $0 \leq h(t) \leq 27$

b. What would be the theoretical range?

What makes sense in the equation.
 Forget about the word problem.

Range: From 27 feet and below

$$h(t) \leq 27 \text{ feet}$$